

WHAT IS CLAIMED IS:

1. A method of delivering cryogenic energy to a selected location along an annular surface of an intervertebral disc comprising:
  - inserting a cryoprobe into the disc through an opening within said disc, wherein said cryoprobe has a thermally transmissive region for transferring cryogenic energy to the selected location;
  - advancing said cryoprobe within said disc;
  - arcing said cryoprobe around a portion of an interior aspect of an annular lamella defining the annular surface; and
  - delivering the cryogenic energy to said selected location.
2. The method of Claim 1, wherein said cryoprobe is blunt-tipped and flexible.
3. The method of Claim 1, wherein said opening is an iatrogenic hole.
4. The method of Claim 1, wherein said thermally transmissive region is located at or near the distal tip of said cryoprobe.
5. The method of Claim 1, further comprising delivering a coolant to the thermally transmissive region.
6. The method of Claim 5, wherein said coolant is selected from the group consisting of: a refrigerated liquid, an expanding gas, and a vaporizing liquid.
7. The method of Claim 5, wherein said coolant is selected from the group consisting of: HCF's, CFC's, chlorodifluoromethane, polydimethylsiloxane, ethyl alcohol, liquid nitrogen, pentafluoroethane, nitrous oxide and carbon dioxide.
8. A method of hypothermically treating selected tissue of an intervertebral disc annulus comprising:

inserting a needle into the annulus through an opening, wherein said needle has a thermally transmissive region in communication with an external refrigeration device for providing cryogenic energy,

advancing the needle between annular lamellae to a location adjacent the selected tissue along the circumference defined by the lamellae; and

applying cryogenic energy to the selected tissue.

9. The method of Claim 8, wherein said needle is an elongated hypothermia needle with a distal sharpened tip.

10. The method of Claim 8, wherein said opening is an iatrogenic hole.

11. The method of Claim 8, wherein said opening is formed by the advancement of said tip.

12. The method of Claim 8, further comprising delivering a coolant to the thermally transmissive region.

13. The method of Claim 12, wherein said coolant is selected from the group consisting of: a refrigerated liquid, an expanding gas, and a vaporizing liquid.

14. The method of Claim 12, wherein said coolant is selected from the group consisting of: HCF's, CFC's, chlorodifluoromethane, polydimethylsiloxane, ethyl alcohol, liquid nitrogen, pentafluoroethane, nitrous oxide and carbon dioxide.

15. A method of hypothermically treating selected tissue of a vertebral body comprising:

inserting a hypothermia instrument into the vertebral body through an opening, wherein said instrument has a thermally transmissive region in communication with an external refrigeration device for providing a therapeutic temperature;

advancing the thermally transmissive region within the vertebral body; and

activating said external refrigeration device, thereby cooling the thermally transmissive region and adjacent vertebral body tissue.

16. The method of Claim 15, wherein said instrument is a hypothermia needle with a distal sharpened tip or a blunt-tipped flexible cryoprobe.

17. The method of Claim 15, wherein said opening is an iatrogenic hole.

18. The method of Claim 15, wherein said opening is created by drilling a hole into the bony section of the vertebral body.

19. The method of Claim 15, wherein said thermally transmissive region is cooled to a temperature in the range of 0°F to 98.5°F.

20. The method of Claim 15, wherein said thermally transmissive region is cooled for one or more time periods in the range of 1 minute to 60 minutes.

21. The method of Claim 15, further comprising delivering a coolant to the thermally transmissive region.

22. The method of Claim 21, wherein said coolant is selected from the group consisting of: a refrigerated liquid, an expanding gas, and a vaporizing liquid.

23. The method of Claim 21, wherein said coolant is selected from the group consisting of: HCF's, CFC's, chlorodifluoromethane, polydimethylsiloxane, ethyl alcohol, liquid nitrogen, pentafluoroethane, nitrous oxide and carbon dioxide.

24. A method of hypothermically treating selected tissue of a vertebral body comprising:

inserting a cryoprobe into the vertebral body through an opening in said body, wherein said probe has a thermally transmissive region for presenting hypothermic temperatures located proximate to the distal tip;

advancing the cryoprobe within said body;

arcing said cryoprobe around an interior of the body; and

delivering the cryogenic energy to said selected tissue.

25. The method of Claim 24, wherein said cryoprobe is blunt-tipped and flexible.

26. The method of Claim 24, wherein said opening is an iatrogenic hole.

27. The method of Claim 24, wherein the thermally transmissive region is placed adjacent to the tissue within the body defining the superior endplate of a disc below said body.

28. The method of Claim 24, wherein the thermally transmissive region is placed adjacent to the tissue within the body defining the inferior endplate of a disc above said body.

29. The method of Claim 24, further comprising delivering a coolant to the thermally transmissive region.

30. The method of Claim 29, wherein said coolant is selected from the group consisting of: a refrigerated liquid, an expanding gas, and a vaporizing liquid.

31. The method of Claim 29, wherein said coolant is selected from the group consisting of: HCF's, CFC's, chlorodifluoromethane, polydimethylsiloxane, ethyl alcohol, liquid nitrogen, pentafluoroethane, nitrous oxide and carbon dioxide.

32. A method of treating spinal pain by delivering cryogenic energy to a selected location on intervertebral disc comprising:

inserting a cryoprobe into the disc through an opening within said disc, wherein said cryoprobe has a thermally transmissive region for transferring cryogenic energy to the selected location;

advancing said cryoprobe within said disc;

arcing said cryoprobe around a portion of said disc; and

delivering the cryogenic energy to said selected location.

33. The method of Claim 32, wherein said cryoprobe is blunt-tipped and flexible.

34. The method of Claim 32, wherein said opening is an iatrogenic hole.

35. The method of Claim 32, wherein said thermally transmissive region is located at or near the distal tip of said cryoprobe.

36. The method of Claim 32, further comprising delivering a coolant to the thermally transmissive region.

37. The method of Claim 36, wherein said coolant is selected from the group consisting of: a refrigerated liquid, an expanding gas, and a vaporizing liquid.

38. The method of Claim 36, wherein said coolant is selected from the group consisting of: HCF's, CFC's, chlorodifluoromethane, polydimethylsiloxane, ethyl alcohol, liquid nitrogen, pentafluoroethane, nitrous oxide and carbon dioxide.

39. A method of delivering cryogenic energy within a vertebral body comprising:  
forming a hole within the vertebral body;  
inserting a cryoprobe into said body, wherein said cryoprobe has a distal tip and a thermally transmissive region located proximate to said tip;  
activating said thermally transmissive region; and

delivering cryogenic energy for one or more time periods in the range of 1 minute to 60 minutes.